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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application for:	Examiner: Szeto, Jack W.
Robert A. Dunstan	Art Group: 2113
Application No.: 10/644,432	Confirmation No. 6990
Filed: 08/19/2003	
For: OPERATIONAL STATE PRESERVATION IN THE ABSENCE OF AC POWER	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Appellant's Brief

Dear Sir:

This appeal arises from a final decision by the Examiner, mailed August 22, 2006. The final decision was in response to arguments filed on June 16, 2006, in response to an earlier office action, mailed March 28, 2006.

Appellants respectfully request consideration of this appeal by the Board of Patent Appeals and Interferences for allowance of the present patent application.

(1) Real Party In Interest

The real party in interest is Intel Corporation of Santa Clara, CA.

(2) Related Appeals And Interferences

To the best of Appellants' knowledge, there are no appeals or interferences related to the present appeal, which will directly affect, be directly affected by, or have a bearing on the Board's decision.

(3) Status Of The Claims

Claims 1-4 and 6-35 are pending and rejected in the Final Office Action dated August 22, 2006. Claim 5 is objected to for depending upon a rejected base claim. Although Applicant does not agree with them, Applicant elects not to appeal the rejections of claims 11-13, 24-27, and 30-31. The rejections of, and/or objections to, all other claims are appealed. All claims are reproduced in Appendix A.

(4) Status of Amendments

In Examiner's Advisory Action dated November 14, 2006, an After-Final amendment to claim 5 was not entered for raising new issues that would require further consideration and/or search. Thus, for purposes of the present appeal, no amendments have been taken since the Final Office Action dated August 22, 2006.

(5) Summary of the invention

Independent claim 1 is directed towards a method. Support for each limitation of claim 1 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

In an apparatus, a method of operation comprising:

> in response to an AC failure condition of the apparatus, supplying power from a backup power source to the apparatus for at least a time period; (**page 7, lines 21-23; page 8 lines 4-13; page 12, lines 12-25; figure 3a, reference 302; page 13, line 24 through page 14, line 4**)

additionally initiating a suspend process to place the apparatus in a suspended to memory state, to be sustained by the supplied backup power; and (**page 7, lines 16-21; page 14, lines 5-17; figure 3a, reference 306, page 15, lines 6-9**)

intervening and preserving a persistent copy of an operational state of the apparatus, before completing the suspend process and placing the apparatus in the suspended to memory state, sustained by the supplied backup power. (**page 9, lines 14-21; figure 2a, reference 218; page 10, line 21 through page 11, line 4; figure 3a, reference 308, 310; page 14, lines 18-26, page 15, lines 10-14**)

Independent claim 8 is directed towards a method. Support for each limitation of claim 8 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

In an apparatus, a method of operation comprising:

maintaining the apparatus in a suspended to memory state, employing a backup power source, while the apparatus is in an AC failed condition, resulting in a memory of the apparatus having a suspended operational state of the apparatus; (**page 8, lines 18-21; page 12, lines 17-20; page 14, lines 11-17; page 18, lines 7-14**)

monitoring for re-application of AC to the apparatus while the apparatus is in the suspended to memory state maintained by the backup power source; and (**page 15, lines 10-14, page 18, lines 15-21, figure 4, reference 402;**)

resuming the apparatus to an active state on re-application of AC to the apparatus, where the apparatus continues operation, starting from the operational state previously suspended in the memory. (**page 8, lines 21-22; page 11, line 21 through page 12 line 2; page 17, lines 4-8, page 18, line 22 through page 19, line 3; figure 4 references 404, 406, 408**)

Independent claim 14 is directed towards a system. Support for each limitation of claim 14 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

A system comprising:

a memory to store at least a current operational state of the system; (**figure 1, references 106, 128a; page 7, lines 12-15; page 9, lines 4-7**)

a persistent storage; (**figure 1, reference 110; page 8, lines 14-17; page 9, lines 4-7**)

a basic I/O system (BIOS) operatively coupled the memory and the persistent storage, to intervene and save a persistent copy of the operational state of the system in the persistent storage, when a suspend process is initiated by an operating system (OS) to place the system in the suspended to memory state; and (**figure 1, reference 124; page 7, lines 10-12; page 9, lines 14-21; figure 2a, reference 218; page 10, line 21 through page 11, line 4; figure 3a, reference 308, 310; page 14, lines 18-26, page 15, lines 10-14; figure 2c, reference 252**)

a controller operatively coupled to the OS to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition. (**figure 1, reference 108; page 7, line 16 through page 8, line 3; page 7, lines 16-23; page 14, lines 5-17; figure 3a, reference 306, page 15, lines 6-9**)

Independent claim 21 is directed towards a system. Support for each limitation of claim 21 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

A system comprising:

a memory to store an operational state of the system; (**figure 1, references 106, 128a; page 7, lines 12-15; page 9, lines 4-7**)

a power supply coupled to the memory, including a backup power source to sustain the memory for at least a time period, while the system is suspended to memory under an AC failure condition; (**figure 1, references 116, 132; page 8, lines 4-13**)

a basic input/output system (BIOS) operatively coupled to an operating system (OS), and equipped to initiate a resume process and transfer to the OS to continue and complete the resume process, and place the system in an active state, where the system continues operation,

starting from the previously suspended operational state of the system in memory; and (**figure 1, reference 124; page 7, lines 10-12; page 8, lines 21-22; page 11, line 21 through page 12 line 2; page 17, lines 4-8, page 18, line 15 through page 19, line 3; figure 4 references 404, 406, 408; figure 2c, reference 252**)

a controller operatively coupled to the BIOS to cause the BIOS to initiate the resume process on re-application of AC to the system. (**figure 1, reference 108; page 7, line 16 through page 8, line 3; page 7, line 24 through page 8, line 3; page 18, line 15 through page 19, line 3; figure 4 references 404, 406, 408**)

Independent claim 28 is directed towards an article of manufacture. Support for each limitation of claim 28 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

An article of manufacture comprising:

a storage medium; and (**figure 1, references 110, 128b; page 8, lines 14-17; page 9, lines 4-7; figure 2c, reference 250**)

a plurality of programming instructions stored therein, designed to enable an apparatus to be able to intervene and save a persistent copy of an operational state of the apparatus, before allowing a suspend process initiated in response to an AC failure condition of the apparatus to place the apparatus in a suspended to memory state to complete. (**figure 1, reference 124; page 7, lines 10-12; figure 2a, reference 218; page 10, line 21 through page 11, line 4; figure 3a, reference 308, 310; page 14, lines 18-26, page 15, lines 10-14; figure 2c, reference 252**)

Independent claim 32 is directed towards a method. Support for each limitation of claim 32 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

In an apparatus, a method of operation comprising:

initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus; (**page 16, lines 4-5**)

intervening and preserving a persistent copy of an operational state of the apparatus; (**page 16, lines 1-15**)

signaling an AC failure condition of the apparatus; (**page 16, lines 11-12; figure 3b, reference 322 and "AC Absence" arrow**)

supplying power from a backup power source to the apparatus for at least a time period; (**page 16, lines 14-15; figure 3b, reference 326**)

completing the preserving of the persistent copy of the operational state of the apparatus; (**page 16, lines 11-14; figure 3b, reference 324**)

completing the suspend process and placing the apparatus in the suspended to memory state, sustained by the supplied backup power; and (**page 16, lines 16-18; figure 3b, reference 326)**

immediately waking the apparatus to respond to the AC failure condition. (**page 16, lines 19-20; figure 3b, 328**)

Independent claim 34 is directed towards a method. Support for each limitation of claim 34 in the form of figure elements corresponding to each limitation and portions of the Specification given by page and line numbers for each limitation is shown, inline. In particular:

In an apparatus, a method of operation comprising:

initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus; (**page 16, lines 4-5**)

intervening and preserving a persistent copy of an operational state of the apparatus; (**page 16, lines 1-8; page 17, lines 1-8; page 14, lines 22-26; figure 3a, reference 308**)

completing the suspend process and placing the apparatus in the suspended to memory state; (**page 17, lines 1-8; figure 3a, reference 310**)

signaling an AC failure condition of the apparatus; (**page 17, lines 4-13; figure 3c, reference 342 and "AC Absence" arrow**)

supplying power from a backup power source to the apparatus for at least a time period; and (**page 16, lines 14-15)**

waking the apparatus to respond to the AC failure condition. (**page 17, lines 4-13; figure 3c, references 344, 346, 348**)

(6) Issues Presented

I. Whether claims 1, 4, 6-10, 14, 16-23, 28-29, and 32-35 are properly rejected under 35 USC §102(e) for being unpatentable over US Publication No. 2004/0088589 issued to Westerinen *et al* ("Westerinen") and whether claim 5 has been properly objected to for depending on a rejected base claim.

II. Whether Claims 2, 3, and 15 are properly rejected under U.S.C. §103(a) as being unpatentable over Westerinen in various combinations with US Patent No. 6,618,813 issued to Hsu *et al* ("Hsu") and US Patent Publication No. 2004/0073818 issued to Cheok *et al* ("Cheok").

(7) Arguments

I. Rejection of claims 1, 4, 6-10, 14, 16-23, 28-29, and 32-35 under 35 U.S.C. §102(e) was improper because Westerinen fails to disclose each and every claimed limitation.

In the above captioned Final Office Action, the Examiner rejected claims 1, 4, 6-10, 14, 16-23, 28-29, and 32-35 as being unpatentable over Westerinen. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

A. Claims 1, 4, 6, and 7

Independent claim 1 recites:

In an apparatus, a method of operation comprising:

in response to an AC failure condition of the apparatus, supplying power from a backup power source to the apparatus for at least a time period;

additionally initiating a suspend process to place the apparatus in a suspended to memory state, to be sustained by the supplied backup power; and

intervening and preserving a persistent copy of an operational state of the apparatus, *before completing the suspend process* and placing the apparatus in the suspended to memory state, sustained by the supplied backup power.

Thus, the method claim 1 requires that, upon detection of AC failure, the apparatus first initiate a suspend process to place the apparatus in a suspended to memory state, to be sustained by the supplied backup power, and second to intervene and preserve "a persistent copy of the operational state of the apparatus, *before completing the suspend process*".

Westerinen discloses a computer system that, among other things, detects an AC power outage and puts the computer into hibernation mode using backup power. Once the system is in hibernation mode, a persistent copy of the system's state data is saved on the system's hard drive. Next, the power supply disconnects the battery to preserve battery power and the system goes into a powered-off state. When AC power returns, the power management controller brings the system back into hibernation state and a user may then wake up the system by pressing the power button. (Westerinen, paragraphs [0033] – [0035].)

On page 3 of the Non-Final Office Action dated March 28, 2006 (whose rejections were incorporated into the Final Office Action dated August 22, 2006) Examiner cites Figure 4 of Westerinen – specifically, the S3 state at 96 – for the proposition that Westerinen discloses "initiating a suspend process to place the apparatus in a suspended to memory state, to be sustained by the supplied backup power". Examiner also cites paragraph [0024] of Westerinen for the proposition that Westerinen discloses "intervening and preserving a persistent copy of an operational state of the apparatus, *before completing the suspend process*." However, inspection of Westerinen fails to uncover this final limitation.

Figure 4 of Westerinen depicts state transitions of the Westerinen system. Beginning with 92, the system is in a standby state sustained by AC power. Then, upon AC failure, the system transitions to standby state (S3) sustained by battery power at 96. After this transition is *complete*, the Power Management Controller wakes up the system and the system is placed into a working state at 98 before the system transitions to hibernation state at 100. *At this point*, it saves a copy of the system state to a HDD (see also paragraph [0033]). Therefore, Westerinen does not intervene and preserve "a persistent copy of an operational state of the apparatus, *before completing the suspend process*" as required by claim 1. Rather, the method of Westerinen preserves a persistent copy of the operational state only *after completing the suspended to memory process and waking up the system* . This is the exact opposite of claim 1.

Therefore, for at least these reasons, Applicant respectfully submits that Westerinen fails to teach each and every element of claim 1 as required to sustain a rejection under §102(e). Thus, Applicant submits that claim 1 is patentable over Westerinen and requests that claim 1 be moved into a condition for allowance.

Claims 4, 6 and 7 depend from claim 1, incorporating its limitations. Thus, for at least the reasons cited above in regards to the discussion of claim 1, Applicant respectfully submits that claims 4, 6, and 7 are also patentable over Westerinen.

Additionally, Applicant submits these additional reasons for the allowability of claim 4.

Claim 4 recites a method, specifically, "[t]he method of claim 1, wherein

> the intervening comprises *transferring control to an input/output system (BIOS) of the apparatus*; and
> the preserving comprises the BIOS saving the operational state of the apparatus to a persistent storage.

Examiner cites Westerinen paragraph [0015] for the proposition that the elements of claim 4 are taught by Westerinen. That paragraph states that the BIOS of the system discussed in Westerinen accepts requests from the drivers of the operating

system as well as application programs. It then goes on to say that "the BIOS 26 is programmed to be part of the mechanism for preserving the state data of the computer in the event of an AC power failure that occurs when the computer is in a standby state."

First, as pointed out in the discussion of claim 1 above, claim 1 – and therefore claim 4 – requires that the intervening occur *before completing the suspend process*. Thus, the fact that BIOS 26 of Westerinen is programmed to be part of the mechanism for preserving state data when AC fails while the system is *already in a standby state* is simply not relevant to the limitations of claim 4.

Further, Applicants respectfully submit that the BIOS accepting requests from the operating system and being programmed to be *part of* the mechanism to preserve state data is not the same thing as having *control of the apparatus* transferred to the BIOS as required by claim 4. Thus, for this additional reason, Applicant submits that Westerinen fails to anticipate each and every element of claim 4 as required to sustain a rejection of claim 4 under §102(e).

B. Claims 8-10

Independent claim 8 recites a method, in particular: In an apparatus, a method of operation comprising:

> maintaining the apparatus in a suspended to memory state, *employing a backup power source*, while the apparatus is in an AC failed condition, resulting in a memory of the apparatus having a suspended operational state of the apparatus;
>
> monitoring for re-application of AC to the apparatus *while the apparatus is in the suspended to memory state maintained by the backup power source*; and
>
> resuming the apparatus to an active state on re-application of AC to the apparatus, where the apparatus continues operation, starting from the operational state previously suspended in the memory.

Examiner cites paragraph [0024] of Westerinen for the proposition that Westerinen teaches maintaining the apparatus in a suspended to memory state

employing a backup power source. Examiner also cites paragraph [0034] for the proposition that Westerinen teaches monitoring for re-application of AC to the apparatus while the apparatus is in the suspended to memory state maintained by the backup power source.

Paragraph [0024] discloses only that Westerinen puts the apparatus into a hibernation state, writing the contents of the CPU and RAM to a hard drive before *shutting the power off*. Paragraph [034] discloses that Westerinen causes the apparatus, once in hibernation state, to await steady AC power before waking up the apparatus. Thus, Westerinen can not be said to be "monitoring for re-application of AC to the apparatus while the apparatus is in the suspended to memory state *maintained by the backup power source*" as required by claim 8. Rather, Westerinen monitors for steady AC power while the apparatus is in a hibernated state *employing no power source at all*.

Thus, for at least this reason, Applicant submits that Westerinen fails to anticipate each and every element of claim 8. Thus, Applicant respectfully submits that claim 8 is patentable over Westerinen.

Claims 9-10 depend from claim 8 incorporating its limitations. Thus, for at least the same reasons as discussed in regards to claim 8, Applicants respectfully submit that claims 9 and 10 are also patentable over Westerinen.

C. Claims 14, and 16-20

Claim 14 is directed towards a system, in particular a system comprising:

> a memory to store at least a current operational state of the system;
> a persistent storage;
> a basic I/O system (BIOS) operatively coupled the memory and the persistent storage, to intervene and save a persistent copy of the operational state of the system in the persistent storage, when a suspend process is initiated by an operating system (OS) to place the system in the suspended to memory state; and
> a controller operatively coupled to the OS to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition.

Examiner cites paragraph [0015] for the proposition that the BIOS of Westerinen intervenes to "save a persistent copy of the operational state of the system in the persistent storage" and paragraph [0029] for the proposition that Westerinen teaches doing so "when a suspend process is initiated by an operating system (OS) to place the system in the suspended to memory state". Examiner also cites paragraph [0029] for the proposition that Westerinen teaches "a controller operatively coupled to the OS to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition." Applicant submits that there are three novel differences between claim 14 and the system of Westerinen.

First, paragraph [0015] states that the BIOS of Westerinen accepts requests from OS drivers as well as applications. It then goes on to say that "the BIOS 26 is programmed to be part of the mechanism for preserving the state data of the computer in the event of an AC power failure that occurs when the computer is in a standby state." Applicants respectfully submit that the BIOS accepting requests from the operating system and being programmed to be *part of* the mechanism to preserve state data is not the same thing as the BIOS being adapted to "intervene and save a persistent copy" as required by claim 1.

Second, paragraph [0029] discusses how the system of Westerinen responds when there is an AC outage condition *when the system is already in a standby state*. Specifically, the system will enter a hibernation state with the operational state written to a hard drive and disconnect the power supply. Thus, even assuming *arguendo* that the BIOS of Westerinen is adapted to *intervene* and save a persistent copy of the operational state, it can not be said to do so "when a suspend process is initiated by an operating system (OS) to place the system in the suspended to memory state" as required by claim 1. Rather, the system of Westerinen saves a persistent copy of the operational state *after the system is already in a suspended to memory state*.

Third, paragraph [0029] discloses that the controller of Westerinen initiates a *hibernation* state upon indication of AC failure when the system in Westerinen is in a suspended to memory (S3) state. Thus, the controller of Westerinen can not be said to

"cause the OS to *initiate the suspend process to place the system in the suspended to memory state*, when the system is in an AC failed condition" as required by claim 1. Rather, Westerinen discloses initiating a *hibernation state*, when the system is *already in a suspended to memory state*, upon detection of an AC failure condition.

Thus, for at least these reasons, Applicant submits that Westerinen fails to teach each and every element of claim 14. Thus, Applicant respectfully submits that claim 14 is patentable over Westerienen.

Claims 16-20 depend from claim 14 incorporating its limitations. Thus, for at least the same reasons in regards to the discussion of claim 14 above, Applicants submit that claims 16-20 are also patentable over Westerinen.

D. Claims 21-23

Claim 21 recites a system, in particular a system comprising:

> a memory to store an operational state of the system;
> a power supply coupled to the memory, including a backup power source to sustain the memory for at least a time period, while the system is suspended to memory under an AC failure condition;
> a basic input/output system (BIOS) operatively coupled to an operating system (OS), and equipped to initiate a resume process and transfer to the OS to continue and complete the resume process, and place the system in an active state, where the system continues operation, starting from the previously suspended operational state of the system in memory; and
> a controller operatively coupled to the BIOS to cause the BIOS to initiate the resume process on re-application of AC to the system.

Examiner cites paragraph [0034] for the proposition that Westerinen teaches "a controller operatively coupled to the BIOS to cause the BIOS to initiate the resume process on re-application of AC to the system". However, that paragraph merely discloses that the controller of Westerinen places the system into a *hibernation state* upon re-application of AC power. The text goes on to describe that a *user* may press an on button of the system to cause the system to exit the hibernation state and then go

into a standby state. It is only after the user presses the on button a second time, does the controller *instruct the operating system* to resume the stored working state.

First, the Westerinen system described in paragraph [0034] does not have "a controller operatively coupled to the BIOS to cause the BIOS to initiate the resume process on re-application of AC to the system" as required by claim 21. Rather, the Westerinen system has a controller which causes the system to enter a *hibernation state* upon re-application of AC power which is the exact opposite of claim 21.

Secondly, the system of Westerinen does not "cause the BIOS to initiate the resume process upon re-application of AC power" as required by claim 21, but rather causes the *operating system* to initiate the resume process and only after re-application of AC power and a *user pressing the on button twice*.

Thus, Applicant respectfully submits that Westerinen fails to anticipate each and every element of claim 21 as required to sustain a rejection under §102(e). Therefore, Applicant submits that claim 21, and claims 22-23 which depend from claim 21 incorporating its limitations, are patentable over Westerinen.

E. Claims 28-29

Independent claim 28 is directed towards an article, specifically an article of manufacture comprising:

> a storage medium; and
> a plurality of programming instructions stored therein, designed to enable an apparatus to be able to intervene and save a persistent copy of an operational state of the apparatus, *before allowing a suspend process initiated in response to an AC failure condition of the apparatus to place the apparatus in a suspended to memory state to complete*.

Examiner cites paragraph [0024] for the proposition that Westerinen discloses "a plurality of programming instructions … designed to enable an apparatus to be able to intervene and save a persistent copy of an operational state of the apparatus, before allowing a suspend process initiated in response to an AC failure condition of the apparatus to place the apparatus in a suspended to memory state to complete".

Paragraph [0024] reveals that the computer system of Westerinen puts itself into a hibernation state, with a persistent copy of the operating state of the system stored on a hard disk. However, the computer system of Westerinen does not do so "before allowing a suspend process initiated in response to an AC failure condition of the apparatus to place the apparatus in a *suspended to memory state* to complete" as required by claim 28. Rather, the system of Westerinen merely places the apparatus in a *suspended to disk state* (i.e. hibernation) in response to an AC failure condition of the apparatus without also initiating a suspended to memory state.

Thus, for at least these reasons Applicant submits that Westerinen fails to disclose each and every element of claim 28 as required to sustain a rejection under §102(e). Therefore, Applicant respectfully submits that claim 28, and claim 29 which depends from claim 28 incorporating its limitations, are patentable over Westerinen.

F. Claims 32-33

Independent claim 32 is directed towards a method, in particular: in an apparatus, a method of operation comprising:

> initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus;
> *intervening and preserving a persistent copy of an operational state of the apparatus*;
> signaling an AC failure condition of the apparatus;
> supplying power from a backup power source to the apparatus for at least a time period;
> completing the preserving of the persistent copy of the operational state of the apparatus;
> completing the suspend process and placing the apparatus in the suspended to memory state, sustained by the supplied backup power; and
> immediately waking the apparatus to respond to the AC failure condition.

Examiner cites paragraph [0024] of Westerinen for the proposition that Westerinen discloses "intervening and preserving a persistent copy of an operational state of the apparatus". However, the method disclosed in Westerinen does not

intervene into any process when preserving a persistent copy of the operational state of the device as required by claim 32. Rather, it does so only as part of *the normal course of placing the device into a hibernation mode*. Therefore, Westerinen fails to teach each and every element of claim 32. Thus, Applicant respectfully submits that claim 32, as ell as claim 33 which depends from claim 32 incorporating its limitations, is patentable over Westerinen.

G. Claims 34-35

Independent claim 34 is directed towards a method, in particular In an apparatus, a method of operation comprising:

> initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus;
> *intervening and preserving a persistent copy of an operational state of the apparatus*;
> completing the suspend process and placing the apparatus in the suspended to memory state;
> signaling an AC failure condition of the apparatus;
> supplying power from a backup power source to the apparatus for at least a time period; and
> waking the apparatus to respond to the AC failure condition.

Examiner cites paragraph [0024] of Westerinen for the proposition that Westerinen discloses "intervening and preserving a persistent copy of an operational state of the apparatus". However, the method disclosed in Westerinen does not *intervene* into any process when preserving a persistent copy of the operational state of the device as required by claim 34. Rather, it does so only as part of *the normal course of placing the device into a hibernation mode*. Therefore, Westerinen fails to teach each and every element of claim 34. Thus, Applicant respectfully submits that claim 34, as well as claim 35 which depends from claim 34 incorporating its limitations, is patentable over Westerinen.

II. Rejection of claims 2, 3, and 15 under 35 U.S.C. §103(a) was improper because Westerinen, alone and in combination with either Hsu or Cheok, failed to teach or suggest each and every claimed limitation.

To establish obviousness under 35 U.S.C. § 103, the Examiner must view the invention as a whole. Further, the Examiner is to perform the obviousness analysis in accordance with the standard set forth by the Supreme Court in Graham v. John Deere Co., 383 U.S. 1 (1966). That standard requires that the Examiner (1) determine the scope and content of the prior art; (2) ascertain the differences between the prior art and the claims in issue; (3) resolve the level of ordinary skill in the art; and (4) evaluate evidence of secondary considerations. Id. at 17-18; see also MPEP 2141. Secondary considerations include whether the invention met with commercial success, whether the invention answered a long felt need, and whether others attempting the invention have failed. Graham, 383 U.S. at 17-18. Further, in applying the Graham framework, the Examiner must consider the invention as a whole, without the benefit of hindsight. MPEP 2141.

For a claimed invention to be nonobvious, there must be no teaching, suggestion, or motivation to modify the prior art to achieve the claimed invention. In re Royka, 490 F.2d 981 (CCPA 1974). Such as showing may be implicit, but "the test for an implicit showing of a teaching, suggestion, or motivation, is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

A. Claims 2-3

In the above-captioned Office Action, Examiner rejects claim 2 under 35 U.S.C. §103(a) as being unpatentable over Westerinen in view of US Patent No. 6,618,813 issued to Hsu *et al* ("Hsu"). Claim 3 is rejected under §103(a) as being unpatentable over Westerinen in view of U.S. Patent Application 2004/0073818 filed by Cheok *et al* ("Cheok").

Claims 2 and 3 depend from claim 1 incorporating its limitations. As discussed above, claim 1 is patentable over Westerinen. Also, neither Hsu nor Cheok remedy the deficiency of Westerinen. In particular, the cited texts from neither reference teaches a method including "intervening and preserving a persistent copy of an operational state of the apparatus, *before completing the suspend process*" as required by claim 1.

Further there could have been no suggestion to modify Westerinen to achieve the methods of claims 2 or 3. The purpose of Westerinen is to preserve backup power after placing the computer system into a hibernation state. Therefore, when the device is in a suspended to memory state and AC failure is detected, the Westerinen method calls for the device to temporarily run on backup power, be woken up, and then placed into a hibernation state prior to disconnect of the backup power (see discussion of claim 1 above). In other words, the device of Westerinen is placed into a suspended to memory state only *prior to detection of an AC failure*. Thus, it would be nonsensical to modify Westerinen to intervene and preserve "a persistent copy of an operational state of the apparatus, before completing the suspend process" as required by claims 2 and 3 because the device has not yet detected an AC failure. Therefore, there could have been no suggestion to one of ordinary skill in the art to modify the Westerinen method to achieve the methods of claim 2 and 3 and, accordingly, Applicant respectfully submits that claims 2 and 3 are nonobvious over Westerinen in view of either Hsu or Cheok.

For at least these reasons, Applicant respectfully submits that claim 2 is patentable over Westerinen in view of Hsu and that claim 3 is patentable over Westerinen in view of Cheok.

B. Claim 15

In the above captioned Office Action, Examiner rejects claim 15 under 35 U.S.C. §103(a) as being unpatentable over Westerinen in view of Cheok. Claim 15 depends from claim 14 which, as discussed above, is patentable over Westerinen. Further, Cheok fails to remedy the deficiencies of Westerinen. Also, there could have been no

suggestion to modify Westerinen to achieve the system of claim 15. Accordingly, claim 15 is nonobvious over Westerinen either alone or in combination with Cheok.

Thus, Applicant respectfully submits that claim 15 is patentable over Westerinen either alone or in combination with Cheok.

(8) Conclusion

Appellants respectfully submit that all the appealed claims in this application are patentable and request that the Board of Patent Appeals and Interferences overrule the Examiner and direct allowance of the rejected claims.

We do not believe any fees, in particular extension of time fees, are needed. However, should that be necessary, please charge our Deposit Account No. 500393.

In addition, please charge any shortages and credit any overages to Deposit Account No. 500393.

Respectfully submitted,

Appellant Applicant

Dated: 02/14/2007

/Richard B. Leggett/

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Appendix A: Claims As Pending

1. (Original) In an apparatus, a method of operation comprising:

in response to an AC failure condition of the apparatus, supplying power from a backup power source to the apparatus for at least a time period;

additionally initiating a suspend process to place the apparatus in a suspended to memory state, to be sustained by the supplied backup power; and

intervening and preserving a persistent copy of an operational state of the apparatus, before completing the suspend process and placing the apparatus in the suspended to memory state, sustained by the supplied backup power.

2. (Original) The method of claim 1, wherein the suspend process is initiated by an operating system (OS) of the apparatus, and comprises the OS instructing a controller of the apparatus to shut off delivery of normal power within the apparatus, leaving only delivery of standby power within the apparatus.

3. (Original) The method of claim 2, wherein

the OS instructing comprises the OS attempting to write to a register of the controller; and

the intervening comprises the controller in response to the OS attempted write, causing a basic input/output system (BIOS) to perform the preservation of the operational state of the apparatus.

4. (Original) The method of claim 1, wherein

the intervening comprises transferring control to an input/output system (BIOS) of the apparatus; and

the preserving comprises the BIOS saving the operational state of the apparatus to a persistent storage.

5. (Currently amended) The method of claim 1, wherein the method further comprises receiving an interruption interrupting the preserving of the persistent copy, in response, aborting the preserving, and completing the suspend process, placing the apparatus in the suspended to memory state, sustained by the supplied backup power.

6. (Original) The method of claim 1, wherein the method further comprises

monitoring for absence of AC to a power supply of the apparatus; and

generating a signal indicating AC failure on detection of absence of AC to the power supply.

7. (Original) The method of claim 6, wherein the monitoring and generating are performed by the power supply.

8. (Original) In an apparatus, a method of operation comprising:

maintaining the apparatus in a suspended to memory state, employing a backup power source, while the apparatus is in an AC failed condition, resulting in a memory of the apparatus having a suspended operational state of the apparatus;

monitoring for re-application of AC to the apparatus while the apparatus is in the suspended to memory state maintained by the backup power source; and

resuming the apparatus to an active state on re-application of AC to the apparatus, where the apparatus continues operation, starting from the operational state previously suspended in the memory.

9. (Original) The method of claim 8, wherein

the method further comprises signaling a controller of the apparatus on re-application of AC to the apparatus while the apparatus is in the suspended to memory state;

handling the signaling by the controller as a device wake event, causing a basic input/output system (BIOS) of the apparatus to gain control; and

the BIOS initiating a resume process, and transferring control to an operating system (OS) of the apparatus to complete the resume process, transition the apparatus from the suspended to memory state to the active state, and continue operation of the apparatus, starting from the previous suspended operational state in memory.

10. (Original) The method of claim 9, wherein the signaling of the controller is performed by a power supply of the apparatus.

11. (Original) In an apparatus, a method of operation comprising:

commencing a cold start reset process on re-application of AC power to the apparatus while the apparatus is in an un-powered state;

determining as part of the cold start reset process, whether a persistent storage of the apparatus comprises a saved operational state of the apparatus;

restoring the saved operational state of the apparatus from the persistent storage to a memory of the apparatus, if the persistent storage is determined to have a saved operational state of the apparatus; and

continuing the cold start reset process as a resume process to allow the apparatus to start operation in an active state, continuing from the restored operational state of the apparatus.

12. (Original) The method of claim 11, wherein

the determining and restoring are performed by a basic input/output system (BIOS) of the apparatus; and

the continuing of the cold start reset process as a resume process comprises the BIOS transferring control to an operating system (OS) of the apparatus to complete the resume process and operate the apparatus in the active state, starting from the restored operational state in memory.

13. (Original) The method of claim 11, wherein the method further comprises continuing with the cold start reset process, upon determining the persistent storage not comprising a saved operational state of the apparatus.

14. (Original) A system comprising:

a memory to store at least a current operational state of the system;

a persistent storage;

a basic I/O system (BIOS) operatively coupled the memory and the persistent storage, to intervene and save a persistent copy of the operational state of the system in the persistent storage, when a suspend process is initiated by an operating system (OS) to place the system in the suspended to memory state; and

a controller operatively coupled to the OS to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition.

15. (Original) The system of claim 14, wherein

the system further comprises a processor and the OS; and

the controller comprises a register to which the OS writes to initiate the suspend process to place the system in the suspended to memory state, and the controller is equipped to cause the BIOS to gain control, to enable the BIOS to intervene, in response to an attempted write to the register by the OS.

16. (Original) The system of claim 14, wherein the system further comprises a power supply coupled to at least the controller, to monitor for presence of AC, and generate a signal indicating AC failure on detection of absence of AC.

17. (Original) The system of claim 14, wherein the system further comprises a power supply including a backup power source, coupled to the memory, to source

power to the memory to sustain the suspended to memory state for at least a time period during the AC failed condition.

18. (Original) The system of claim 14, wherein the controller is equipped to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition, by way of an interrupt when the system is in an active state.

19. (Original) The system of claim 14, wherein the controller is equipped to cause the OS to initiate the suspend process to place the system in the suspended to memory state, when the system is in an AC failed condition, by waking the system when the system is in a suspended to memory state.

20. (Original) The system of claim 14, wherein the system further comprises a networking interface operatively coupled to the BIOS.

21. (Original) A system comprising:

a memory to store an operational state of the system;

a power supply coupled to the memory, including a backup power source to sustain the memory for at least a time period, while the system is suspended to memory under an AC failure condition;

a basic input/output system (BIOS) operatively coupled to an operating system (OS), and equipped to initiate a resume process and transfer to the OS to continue and complete the resume process, and place the system in an active state, where the system continues operation, starting from the previously suspended operational state of the system in memory; and

a controller operatively coupled to the BIOS to cause the BIOS to initiate the resume process on re-application of AC to the system.

22. (Original) The system of claim 21, wherein

the power supply is further equipped to signal the controller on re-application of AC to the system;

the controller is equipped to handle the signaling as a device wake event, causing BIOS to gain control; and

the BIOS is equipped to initiate the resume process, upon gaining control.

23. (Original) The system of claim 21, wherein the system further comprises the OS, and a networking interface operatively coupled to the BIOS.

24. (Original) A system comprising:

a memory;

a persistent storage to store at least a saved operational state of the system; and

a basic I/O system (BIOS) operationally coupled to the memory and the persistent storage to determine, as part of a cold start reset process commenced in response to re-application of AC power to the system while the system is in an un-powered state, whether the persistent storage comprises a saved operational state of the system, and to restore the saved operational state of the system from the persistent storage to the memory upon determining existence of the saved operational state of the system in the persistent storage.

25. (Original) The system of claim 24, wherein the BIOS is further equipped to continue the cold start reset process as a resume process, on determining and restoring the saved operational state of the system from the persistent storage to the memory, to transition the system from the un-powered state to an active state, where the system continues operation, starting from the restored operational state.

26. (Original) The system of claim 25, wherein

the system further comprises an operating system; and

the BIOS is further designed to transfer control to the operating system to continue and complete the resume process, and resume operating the system at the active state, starting from the restored operating state of the system.

27. (Original) The system of claim 24, wherein the BIOS is further designed to continue the cold start reset process, upon determining the persistent storage not comprising a saved operational state of the system.

28. (Original) An article of manufacture comprising:

a storage medium; and

a plurality of programming instructions stored therein, designed to enable an apparatus to be able to intervene and save a persistent copy of an operational state of the apparatus, before allowing a suspend process initiated in response to an AC failure condition of the apparatus to place the apparatus in a suspended to memory state to complete.

29. (Original) The article of claim 28, wherein the programming instructions are designed to perform the intervening and saving of the persistent copy as a basic input/output system (BIOS), to be given control whenever the suspend process is initiated.

30. (Original) An article of manufacture comprising:

a storage medium;

a plurality of programming instructions stored therein, designed to enable an apparatus to

determine as part of a cold start reset process of the apparatus initiated in response to re-application of AC to the apparatus while the apparatus is in an un-powered state, whether a persistent storage of the apparatus comprises a saved operational state of the apparatus,

restore the saved operational state of the apparatus from the persistent storage to a memory of the apparatus; and

causing the cold start reset process to be completed as a resume process to resume operation of the apparatus in an active state, starting from the restored operational state.

31. (Original) The article of claim 30, wherein the programming instructions are further designed to enable the apparatus to continue and complete the cold start and reset process, after the persistent storage is determined not to comprise a saved operational state of the apparatus.

32. (Original) In an apparatus, a method of operation comprising:

initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus;

intervening and preserving a persistent copy of an operational state of the apparatus;

signaling an AC failure condition of the apparatus;

supplying power from a backup power source to the apparatus for at least a time period;

completing the preserving of the persistent copy of the operational state of the apparatus;

completing the suspend process and placing the apparatus in the suspended to memory state, sustained by the supplied backup power; and

immediately waking the apparatus to respond to the AC failure condition.

33. (Original) The method of claim 32, wherein the method further comprises initiating a resume process to resume the apparatus from the operational state suspended in memory, initiating another suspend process, and intervening and preserving another persistent copy of an operational state of the apparatus, before

completing said another suspend process and placing the apparatus in the suspended to memory state again, sustained by the supplied backup power.

34. (Original) In an apparatus, a method of operation comprising:

initiating a suspend process to place the apparatus in a suspended to memory state due to a reason other than an AC failure condition of the apparatus;

intervening and preserving a persistent copy of an operational state of the apparatus;

completing the suspend process and placing the apparatus in the suspended to memory state;

signaling an AC failure condition of the apparatus;

supplying power from a backup power source to the apparatus for at least a time period; and

waking the apparatus to respond to the AC failure condition.

35. (Original) The method of claim 34, wherein the method further comprises initiating a resume process to resume the apparatus from the operational state suspended in memory, initiating another suspend process, and intervening and preserving another persistent copy of an operational state of the apparatus, before completing said another suspend process and placing the apparatus in the suspended to memory state again, sustained by the supplied backup power.

Appendix B: Evidence

None. No evidence has been submitted under 37 C.F.R. 1.130, 1.131, or 1.132. No evidence entered by Examiner has been relied upon by Appellants in the appeal.

Appendix C: Related Proceedings

None. There are no related appeals or interference proceedings currently pending, which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.